

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

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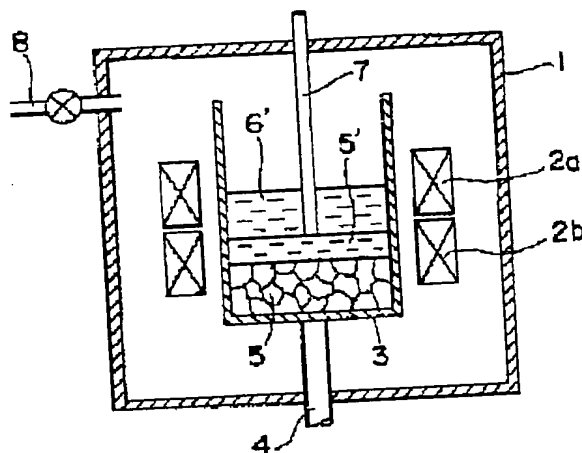
APPLICATION DATE : 06-09-91  
APPLICATION NUMBER : 03254558

APPLICANT : NIKKO KYODO CO LTD;

INVENTOR : KAISOU TAKASHI;

INT.CL. : C30B 17/00 C30B 29/42

TITLE : PRODUCTION OF COMPOUND  
SEMICONDUCTOR SINGLE CRYSTAL



ABSTRACT : PURPOSE: To improve cristallinity of a single crystal by growing the single crystal with temp. control to make a fused raw material zone below a prescribed thickness in the liquid encapsulation Kyropoulo's method.

CONSTITUTION: The heaters 2a, 2b movable up and down are arranged in the tight closed high pressure vessel 1. The raw material of compound semiconductor 5 (for example, InP polycrystal) is added into the crucible 3 and is covered with a liquid encasulating agent 6 (for example,  $B_2O_3$ ) on the upper part and is melted by heating with the heater 2a. Next, the raw material 5 is melted by heating with the heater 2b to make the fused raw material zone 5'. In this time, an inert gas (for example, argon gas) is introduced from the gas inlet pipe 8 to become about 50 atm.. The seed crystal is seeded on the surface of the fused raw material zone 5' by lowering of the crystal pulling shaft 7 and the heater 2b is gradually transferred downward and thickness of the fused raw material zone 5' is controlled to  $\leq 40\text{mm}$  so that temp. fluctuation becomes  $\leq \pm 1.0$ . After solidified till the bottom of the crucible 3 to finish crystal growth, the fused raw material is pulled up from the crucible 3 and is cooled slowly to about  $1000^\circ\text{C}$  to obtain the objective single crystal 60% in crystallinity.

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